THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 1. JANUARY 5, 1946 VOL. 58.

NATIONAL VETERINARY MEDICAL ASSOCIATION

PRESIDENT'S NEW YEAR MESSAGE TO MEMBERS

To All Members of the National Veterinary Medical Association

IT is my privilege as President of the N.V.M.A. to address to you a New Year's message of greeting and goodwill.

Nineteen-forty-five has seen the world pass from war to peace—a peace which has not brought that easement of burden so hopefully anticipated by the nation.

The profession can look back upon the war years with pride in its achievements—in the Royal Army Veterinary Corps and other branches of the fighting Forces, in the Colonial Services, and at home. It must now play its part in the period of reconstruction, when it is faced with even greater problems than those induced by the emergency war programme of agriculture, which aimed at increasing productivity heedless of cost or effect. Now we have a world in which shortage of foodstuffs is a dominant factor and one which figures prominently in the thoughts of all governments.

The recent ministerial statement of agricultural policy has been hailed generally as marking a new era for the industry. It recognises that both the agricultural and national economy are dependent upon an immense drive to improve and increase livestock and livestock products. In consequence, it provides, for three to four years in advance, the minimum level to which prices of livestock products can fall.

Imported foodstuffs for stock are certain to be in short supply, even if exchange were available for purchase. This means that farmers will have to continue, and indeed extend, their complicated cropping programmes to provide the winter and production feed for their livestock. The problem is further aggravated by the need to rear in greater numbers. Livestock rearing and grass management must be co-ordinated, for livestock take time to mature and land reverting to grass must be stocked—otherwise it would be better for it to remain arable.

It would seem obvious, therefore, that in both the near and more distant future, the profession must be given an increasingly important part to play if agricultural production is to be related to human nutrition. The maintenance of health and prolongation of the average productive life of stock can help immeasurably in the build-up of the herds of the country and is an essential contribution to the efficient use of grassland. The control and eventual eradication of the major scourges of livestock are of such paramount importance to success that it is inconceivable that the Government's agricultural policy can have been planned without envisaging active and progressive steps in this direction. Indeed, the improvement in the quality and quantity of the protective foodstuffs so desirable in the interests of better human nutrition is to a considerable extent dependent upon the adoption of more vigorous measures for the improvement of animal health.

The Animal Health Division has a great and urgent responsibility to the nation and to the agricultural industry for the immediate production of working plans for the best and most efficient use of the profession. Further measures for the prevention and control of disease amongst livestock, increased opportunities for research, better educational facilities, the provision of the requisite number of veterinary surgeons for the work to be undertaken, and the rapid translation to the farm of the findings of the laboratory are all problems awaiting urgent Government action.

It is obvious that we, as a profession, must be actively concerned in the new livestock improvement and advisory services, either as an essential component or as a closely integrated parallel service, if the planned expansion of livestock and livestock products is to be conducted

with a minimum of loss from disease and ill-health. The province of the veterinary surgeon as the farmer's trusted adviser on animal health must be recognised to the full by the Government Departments concerned if the official agricultural policy is to be organised with the maximum of efficiency. The farmer to-day appreciates the work of the veterinary surgeon to a higher degree than ever before and he is willing and anxious to make the fullest possible use of veterinary science. Neither he, nor the nation, can afford avoidable losses, and they will be even less able to afford them when livestock prices fall below their present level.

If the profession is to prepare itself for the work at hand, it will require the full co-operation and enthusiasm of all. The part which the National Veterinary Medical Association can play in facilitating the fuller development of the veterinary services to agriculture will depend ultimately upon the interest, service and support that each member is prepared to give. The strength of the Association lies in the loyalty of its members and their readiness to participate in its activities. Those who cannot partake of committee work at Headquarters can materially assist by giving active aid to their local divisions, and to such agricultural and other non-professional bodies and individuals as share the same general aims. Particularly would I seek to enlist your active interest in the Veterinary Educational Trust which is already doing so much with so little on behalf of veterinary science and the livestock industry.

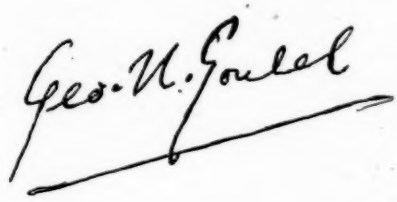
The increased burden likely to be imposed by the new agricultural programme will be lightened in some measure by the recent scheme devised for expediting the release of our members from the Forces and by the entry of new graduates to our ranks.

At the same time we must ensure that our efforts for the well-being of companion and sporting animals are sustained and that the need for research into various urgent problems is recognised and acted upon without undue delay.

The work of veterinary surgeons individually for the animals of the poor is greatly appreciated by the recipients but unfortunately receives little or no public recognition because it is not organised on a Society basis and is rarely if ever publicised. This will continue to be supplemented by our willing collaboration with those Charitable Animal Societies working loyally with the profession for the welfare of animals.

The future is purchased by the present—our planning and action to-day will vitally affect the future of the profession and its service to the community and must be capable of adjustment in the light of advances in knowledge.

In wishing you a happy, prosperous and industrious New Year, I call on all to work together and to go forward as a united profession, so that we may fulfil our obligations to the nation, to agriculture and to veterinary science.



President.

January 1st, 1946.

Further Experiments on the Infectivity of Vaccine Prepared From Brucella Abortus Strain 45(20) for Cattle.

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The Vaccination of Non-Pregnant Cattle

In order to gather more information on the effects of vaccination on animals thought to be free from *Brucella* infection and kept in a non-infected environment, the foetal membranes, colostrum and milk were examined from vaccinated animals in what was expected to be a disease-free herd situated a few miles from the Institute.

An agglutination test on sera from all female animals of breeding age was made in February, 1943, and no sample showed agglutinins. At this time the herd contained 50 animals that had calved and 62 served and unserved heifers. Two of the cows had been purchased two years previously and ten of the unserved heifers were recently purchased animals; otherwise, the herd contained home-bred stock.

The first animals were inoculated with vaccine in March, 1943, and vaccination continued to be practised until December, 1944. During this time 27 heifers, 19 first-calf cows and 28 cows that had had two or more calves were vaccinated. Later a number of these animals were revaccinated after calving. The sera from all the animals of breeding age in the herd were tested at intervals from February, 1943, until May, 1945; and from September, 1944, until May, 1945, the foetal membranes and the colostrum from vaccinated animals were examined for *Brucella abortus* infection. During the latter period milk samples were also examined for that organism. Smears made from foetal membranes and discharges were stained and examined for *Br. abortus*. Material from representative cotyledons was ground up, inoculated on to serum agar and also on to fuchsin agar media and incubated for five days in an atmosphere containing 10 per cent. CO_2. Similar material was suspended in saline solution and inoculated subcutaneously into each of four guinea-pigs. Quarter samples of colostrum were examined culturally and the pooled quarter samples from each animal in 3 c.c. quantities were inoculated intramuscularly into each of two guinea-pigs. The gravity cream from milk samples was examined in the same way as the colostrum but 3 c.c. of gravity cream was inoculated into each of three guinea-pigs. All the guinea-pigs were killed five weeks after they had been inoculated. Their sera were tested for agglutinins for *Brucella* and the spleens were pulped and sown on to serum agar and liver agar media which, after a suitable period of incubation in an atmosphere containing the required amount of CO_2, were examined for *Br. abortus* colonies.

Foetal membranes from 51 vaccinated cattle were examined and none was found infected with *Br. abortus*. The colostrum from 56 vaccinated animals was examined and none was found infected. Of the animals from which both membranes and colostrum were examined 16 were first-calf heifers, 29 were cows that had received one inoculation of vaccine before service and six were cows that had completed a second pregnancy since first vaccinated and had again been vaccinated before the second pregnancy.

One hundred and eighty-six milk samples from 64 vaccinated animals were examined by both direct cultural and guinea-pig tests while 49 samples from the same number of animals were examined by cultural tests only. *Br. abortus* was isolated from one sample of milk. The remainder showed no evidence of infection. The summary of these examinations is presented in Table 1 and full particulars regarding the animal from which *Brucella* was isolated and the strain itself are given below.

No animal's serum showed agglutinins at any of the tests made during the period of nearly two and a half years except the serum from the cow found to have infected milk.

The infected cow, No. 21, was one of the only two cows in the herd in February, 1943, which were not home-bred and she had been purchased at Ayr auction market in March, 1941. The former owner was asked about contagious abortion in his herd up to that date and whether cow 21 had been vaccinated against the disease. He replied by letter saying:—

> "The said cow was bred by me, but I am not quite certain whether this cow was inoculated against contagious abortion or not. At that time I got a slight touch of abortion in my herd for first time and quite a lot of animals at that time were inoculated against this trouble. I am inclined to think this cow would be inoculated, but as I have no records kept of the inoculated animals I am not prepared to say definitely that she was."

The veterinary practitioner to the herd reported that the cow had not been vaccinated.

Cow 21 gave birth to her seventh calf on March 30th, 1943, and was vaccinated for the first time eleven days later. Her serum was tested for agglutinins to *Br. abortus* in February and November, 1943, and in May, 1944, but none was found. Her milk was examined for *Br. abortus*, cultural and guinea-pig tests both being used, on October 24th and 28th, 1944. On neither occasion was *Brucella* recovered from it. Her serum was next tested on December 9th, 1944, and it agglutinated at a titre of 1:160. Milk samples were collected on December 12th and a few colonies of *Brucella* were later recovered from the spleen of one of the three guinea-pigs inoculated with the gravity cream. This guinea-pig's serum showed agglutinins at a dilution of 1:10 only. The two remaining guinea-pigs gave no evidence of any infection. The cow, which was affected with mastitis, went dry soon after the last samples of milk had been collected. Her serum tested for agglutinins on January 25th, 1945, showed a slight reaction at 1:80 and when tested on March 3rd the highest dilution to show a reaction was 1:40. She was brought to the Institute where she gave birth to her eighth calf at full term on April 19th, 1945. The foetal membranes were healthy and no organisms were found in smears made from them, nor was *Br. abortus* recovered from the membranes or the colostrum either by direct cultivation or by the inoculation of guinea-pigs. Six days after calving the serum showed agglutinins at a dilution of 1:10 only. A few days later the cow was slaughtered.

The strain of *Brucella* isolated from the milk of cow 21 was found to be aerobic at the second generation. The strain was thermostable and it was agglutinated by positive serum but not by negative serum. The pathogenicity of the strain was tested by inoculating groups of guinea-pigs intramuscularly with varying dilutions of a suspension of a 48-hour liver agar culture standardised to tube No. 3 on Brown's scale. A number of the guinea-pigs in each group died from intercurrent disease; nevertheless, the examination of the survivors showed that the strain was of comparable virulence to field strains (see McEwen, 1940a).

Table I.—Vaccinated Animals from which Milk was Examined for *Br. abortus*

Animals Examined	Section A Milk Samples Collected Before Calving				Section B Milk Samples Collected After Calving and Before Revaccination				Section C Milk Samples Collected After Revaccination and Before a Second Calving			
	Examined by Biological Tests and Direct Cultivation		Examined by Direct Cultivation only		Examined by Biological Tests and Direct Cultivation		Examined by Direct Cultivation only		Examined by Biological Tests and Direct Cultivation		Examined by Direct Cultivation only	
	No. of Animals	No. of Samples	No. of Animals	No. of Samples	No. of Animals	No. of Samples	No. of Animals	No. of Samples	No. of Animals	No. of Samples	No. of Animals	No. of Samples
Heifers (9)	0	0	0	0	9	9	0	0	7	20	5	5
Cows — first pregnancy following primary vaccination (26)	23	47 (1 sample positive)	17	17	21	26	2	2	4	9	2	2
Revaccinated cows — second pregnancy following primary vaccination (29)	29	66	23	23	9	9	0	0	0	0	0	0
Total (64)	52	113	40	40	39	44	2	2	11	29	7	7

The Vaccination of Cattle in the Early Stages of Pregnancy

The inoculation of vaccine into animals well advanced in pregnancy has been found capable of causing abortion and infection of the udder. Out of five animals vaccinated between the fourth and fifth month of pregnancy, two aborted, one calved prematurely and a fourth was found infected in the udder (McEwen, 1937). A number of pregnant animals in vaccinated herds have, through ignorance or carelessness, been vaccinated and it appeared that when the vaccine was inoculated early in pregnancy there was a good prospect of the animals calving normally and showing no agglutinins for *Brucella* in their sera; the foetal membranes and colostrums from such animals have, however, not been examined. The information obtained from the vaccinated herds is shown in Table II.

TABLE II.—SHOWING THE RESULTS OBTAINED WHERE ANIMALS IN THE FIELD WERE VACCINATED AFTER PREGNANCY

Period After Service when Vaccinated		Results of Serum Agglutination Test After Parturition				
		No.	Positive	Doubtful	Negative	Not Tested
Up to 2 months	Aborted	—	—	—	—	—
	Calved	33	1	1	16	15
2 to 3 months ..	Aborted	—	—	—	—	—
	Calved	2	—	—	1	1
3 to 4 months ..	Aborted	4	3	1	—	—
	Calved	1	—	—	1	—
4 months and over	Aborted ..	9	5	2	1	1
	Calved	9	—	1	6	2

It was considered worth while examining the membranes and colostrum of experimental cattle vaccinated in the early stage of pregnancy and in 1940 ten cross-bred Guernsey-Friesian virgin heifers from a herd that had been free from evidence of abortion infection for several years and had been repeatedly examined by the agglutination test were used for that purpose. The opportunity to purchase the animals arose because part of the farm was being taken over by the military authorities and the herd had to be reduced. The heifers were kept throughout the period of the experiment on sheep pastures not used by cattle and were isolated from other bovine animals.

The cattle were served and at intervals of from one week up to two months and two weeks after service they were vaccinated each with 8 c.c. of live vaccine of opacity equivalent to twice that of tube No. 6 on Brown's scale. Unfortunately two of the animals returned to service after vaccination and it transpired that one was vaccinated one week before and the other six weeks before effective service. One animal proved to be barren.

The foetal membranes from eight and the uterine discharge from one heifer were examined for *Br. abortus*. Colostrum was collected within an hour or two of calving and a number of milk samples were also examined.

The methods of examining the foetal membranes, colostrum and milk were similar to those described in the first portion of this paper except that in the present examinations all the primary cultivation of the tissues and fluids from the heifers was made on Stockmayer medium (Stockmayer, 1933) and the tissues from the guinea-pigs were inoculated on to liver agar. Suspensions from the cotyledons from each set of foetal membranes were inoculated subcutaneously into three guinea-pigs; three guinea-pigs were inoculated intramuscularly with each sample of colostrum and two with each sample of gravity cream from milk.

The results of the examination of the heifers are shown in Table III.

From Table III it will be seen that all seven heifers vaccinated after service gave birth to full-term vigorous calves.

Br. abortus was isolated from the foetal membranes and the colostrum of one animal only; this animal had been vaccinated two months after service. Her serum showed agglutinins for *Br. abortus* at a titre of 1:10 before vaccination; at the time of calving the titre was 1:20 but ten days after calving it had dropped to 1:10. A few *Brucella* colonies grew on direct cultures from the colostrum but similar cultures from the foetal membranes which were normal in appearance did not show the organism. *Br. abortus* was, however, isolated from the spleens of two of the three guinea-pigs inoculated with tissues from the foetal membranes and from the spleens of all three guinea-pigs inoculated with colostrum. The primary cultures from the colostrum had been incubated in an atmosphere containing 10 per cent. CO_2 but the second generation was aerobic and all the strains isolated from the guinea-pigs grew aerobically at the first generation. Furthermore, the strains were thermo-agglutinable and had not caused agglutinins for smooth strains of *Br. abortus* to appear in the guinea-pigs' sera.

Although *Br. abortus* was isolated from only one of the heifers the foetal membranes from heifer No. 3, vaccinated one month after service, showed lesions of a number of the cotyledons and of some areas of the chorion, comparable in macroscopic appearance to the lesions associated with *Brucella* infection and smears made from the lesions contained numerous faintly stained, slender, rod-shaped bacteria. Neither morphologically nor tinctorially did the organisms present the typical appearance of *Br. abortus* from diseased foetal membranes and they were not recovered by any of the means used. The lesions and the atypical bacilli found in smears suggest that a progressive disease of the foetal membranes had occurred as a result of vaccination but the infection had probably been arrested by the time of parturition, the organisms then being either dead or of such low virulence that they could not be recovered.

No evidence of infection was found in any other animal.

The rough strain of *Brucella* isolated from cow No. 4 was proved by further tests carried out on groups of guinea-pigs to be of a similar degree of virulence to strain 45(20) used for the preparation of the vaccine. There can be little doubt that the infection of cow No. 4 came from the vaccine. It must therefore be concluded that cattle possessing no acquired immunity to *Br. abortus* infection should not be vaccinated at any time during pregnancy.

DISCUSSION

The majority of strains of *Br. abortus* recovered from cattle in this country are CO_2-sensitive, but aerobic strains have been found. Smith (1932) met with two aerobic strains in 151 strains

TABLE III.—SHOWING THE RESULTS OBTAINED WHEN ANIMALS WERE VACCINATED AFTER SERVICE AND AT SHORT INTERVALS BEFORE SERVICE

No. of Animal	Time when Vaccinated in relation to effective Service	Macroscopic Appearance of Foetal Membranes	Smears from Foetal Membranes, etc.	Membranes, etc., Cultural Examination	Membranes, etc., Biological Examination	Colostrum, Cultural Examination	Colostrum, Biological Examination	Bacteriological Examination of Milk, Cultural and Biological
1	2 months and 2 weeks after	Lost, but discharge normal	Discharge Neg.	Neg.	Neg.	Neg.	Neg.	3 examinations made, neg.
9	2 months and 1 week after	Normal	Neg.	Neg.	Neg.	Neg.	Neg.	4 examinations made, neg.
4	2 months after	Normal	Neg.	Neg.	Positive aerobic culture	Positive aerobic culture	Positive aerobic culture	1 examination made, neg.
10	8 weeks after	Normal	Neg.	Neg.	Neg.	Neg.	Neg.	4 examinations made, neg.
8	7 weeks after	Normal	Neg.	Neg.	Neg.	Neg.	Neg.	1 examination made, neg.
5	6 weeks after	Normal	Neg.	Neg.	Neg.	Neg.	Neg.	1 examination made, neg.
3	1 month after	A number of cotyledons showed peripheral necrosis	Faintly stained organisms, longer and more slender than *Br. abortus*	Neg.	Neg.	Neg.	Neg.	1 examination made, neg.
2	1 week before	Normal	Neg.	Neg.	Neg.	Neg.	Neg.	2 examinations made, neg.
6	6 weeks before	Normal	Neg.	Neg.	Neg.	Neg.	Neg.	None

recovered from bulk milk samples; both these aerobic strains were obtained from milk from farms where live vaccine had been used. Later (Smith, 1934) he examined milk from individual cows in a vaccinated herd and found two of the ten strains isolated to be aerobic. Examination of milk samples from individual cows in other herds showed that three of 33 strains isolated were aerobic. Minett (1933) reported the isolation of seven aerobic strains from 22 animals that gave positive reactions to the agglutination test in a herd of 43 recently vaccinated cows. Barratt (1935) found nine aerobic strains out of a total of 33 strains, most of which were recovered from bulk milk samples coming from twelve herds. The aerobic strains came from four of the herds and from three of them both aerobic and CO_2-sensitive strains were recovered.

Aerobiosis has been used as a feature distinguishing vaccinal strains recovered from cattle, including strain 19, from field strains and most workers appear to have accepted and not to have questioned the permanency of this acquired character. Theobald Smith (1926) studied the growth requirements of what he termed 'saprophytic' and 'parasitic' strains of *Br. abortus*. The 'saprophytic' strains grew readily under ordinary aerobic conditions whereas the 'parasitic' strains failed to grow or grew but very scantily, but in sealed tubes the growth of both types was good. Most of the strains he studied came from foetuses and milk from cattle in a herd where live vaccine had been used and he suggested that the 'saprophytic' strains originated in culture used as vaccine. A 'saprophytic' strain was recovered from the milk of a cow one year after vaccination and 'saprophytic' strains were isolated from eight of 37 control animals. The interval between the vaccination of the cattle and the recovery of 'saprophytic' strains is not mentioned but in some cases it was probably more than two years. If the 'saprophytic' strains originated in cultures used for vaccine a sojourn extending over a prolonged period of time in the tissues of two bovine animals, the one infected by vaccination and the other by contact with the vaccinated, had not obliterated the acquired character of aerobiosis.

Similar evidence has been presented for strain 45(20) (McEwen, 1940a) in that when cattle infected by vaccination while pregnant were later placed among animals in a non-infected herd the infection was detected six months later in one non-vaccinated animal and an aerobic strain was recovered from her.

Strain 45 and strain 45(6) are precursors of strain 45(20). The intravenous inoculation of strain 45 into pregnant cattle has caused abortion and on the only occasion when the strain was cultivated from uterine material it was aerobic (McEwen, 1937). Strain 45(6) has been recovered twice from bovine animals and it was found aerobic. Strain 45(20) has produced infection on inoculation into pregnant cattle and on all occasions when recovered from cattle it has still been aerobic (McEwen, 1940a). The strain has been recovered from hundreds of guinea-pigs including two series of guinea-pigs through which it was repeatedly passaged but on no occasion has it been anything but aerobic. Aerobiosis has been found a constant characteristic of strain 45(20).

Different behaviour has been attributed to strain 45(20) by Edwards, De Ropp and McLeod (1945). In a group of ten lactating cows inoculated with vaccine prepared from strain 45(20) and not exposed to any other experimental infection they found seven of the nine animals, that later became pregnant, to be infected after calving and three of the seven strains isolated were CO_2-sensitive. More remarkable results were obtained by Edwards *et al.* from animals vaccinated and slaughtered at varying periods after vaccination. *Br. abortus* was recovered from the tissues of five such animals and four times it was found to be CO_2-sensitive. In one cow slaughtered only 14 days after inoculation a CO_2-sensitive strain was isolated from the udder and supramammary lymph gland but not from any other of the many tissues examined. This strain possessed all the characters of a field strain but the authors' faith in use of the agglutination test and special fencing of paddocks to ensure the freedom of their experimental cattle from infection on entering an experiment has convinced them that the strain was the vaccinal strain.

Provided the cattle used were not infected by any strain other than 45(20), Edwards *et al.* have demonstrated a hitherto unsuspected ability of a vaccinal strain that has been cultivated aerobically for over 20 years to recover its CO_2-sensitivity after a sojourn of a few days in the tissues of a bovine animal.

The results reported by these authors and those described in this paper and in former papers (McEwen, 1940b, 1941b) on the infectivity of strain 45(20) when inoculated into non-pregnant cattle are also at variance. In their group of ten vaccinated cows already mentioned, nine were followed through and examined after pregnancy. *Br. abortus* being recovered from seven of them, one indeed calved prematurely with an infected uterus. The present paper records the examination of the foetal membranes and colostrum from 53 animals vaccinated before service, 51 of which were in the same herd, the examination of colostrum from five more such animals and the repeated examination of milk samples from 64 of the animals in the vaccinated herd. From all of these examinations *Br. abortus* was isolated but once, and that from the milk of a cow No. 21 whose history, already given in detail, suggests the possibility of her having been infected before she was vaccinated. The absence of agglutinins, until some months after vaccination, in the serum of cow 21 might be used as an argument against the probability of her having been infected at the time of purchase. The phenomenon of infection without demonstrable serum agglutinins is, however, not unknown and has been reviewed by Doyle (1936) but there is little information on the duration of infection in non-reacting cattle. Birch, Gilman and Stone (1945) working with a group of vaccinated (strain 19) experimental cattle exposed to infection by contact only found three animals infected at parturition to be non-reactors to the agglutination test. One reacted within a month of parturition, a second died before any further information was obtained but the third continued to eliminate *Br. abortus* in her milk and to show a negative reaction to the agglutination test. Unfortunately the authors do not say for how long this cow was found to harbour the infection after its detection at parturition.

Examinations of udder secretions, foetal tissues and uterine discharges are the most reliable means by which infection may be demonstrated in the living animal. The uterus is intermittently infected and excretion of the organisms from the udder may also be intermittent in some animals. Doyle (1935) published data on the recovery of *Br. abortus* from the tissues of cows most of which showed serum agglutinins in high titre, *Brucella* being isolated, though not regularly, from widely distributed lymph glands, the udder, spleen, liver and the bile. Two animals are of special interest in that the serum of one showed incomplete agglutination at a titre of 1:25 and *Br. abortus* was isolated from the bile; the other which had aborted had a titre of 1:1,000 a month later but when slaughtered less than four months after abortion the titre had dropped to 1:50 and *Br. abortus* was isolated from her liver.

The intermittent discharge of *Br. abortus* in body secretions, the recovery of *Br. abortus* from non-reacting animals and the finding of the organism in the tissues of animals with a low and dropping titre all furnish grounds for the hypothesis that the cow found infected in the herd examined carried the infection when she was purchased. Moreover, as non-vaccinated animals may be infected with aerobic strains of *Br. abortus* the isolation of an aerobic strain from the cow in question does not invalidate the hypothesis.

Another aspect of the findings reported by Edwards *et al.* may be mentioned. They report that six of the seven strains isolated from the ten vaccinated cows not exposed to experimental infection were virulent, the seventh strain was not tested; and the CO_2-sensitive strain recovered from the cow slaughtered 14 days after vaccination was fully virulent. Should the vaccine strain mutate and become virulent on inoculation into non-pregnant animals vaccination might be expected to confer a high degree of immunity. The results from the immunisation experiments reported by these authors are, however, in keeping with what is anticipated from vaccination with a living culture of low virulence, this type of vaccine having been shown to confer some protection to experimental exposure provided it is not severe. On the other hand, there is very good evidence that infection with a virulent strain of *Br. abortus* confers a very high degree of resistance to re-infection. A classical experiment reported by M'Fadyean and Stockman (1909) demonstrated this fact. Two maiden heifers were inoculated with virulent culture; when pregnant both were inoculated intravenously with a dense emulsion of infected uterine exudate, yet both animals showed no evidence of uterine infection following this most drastic test. Haring and Traum (1937) in studying the resistance of cattle vaccinated with strain 19, tried to infect four animals that had already been exposed to infection and state, "The resistance shown by the four animals subjected to re-exposure is so definite, in comparison with the infection of the others in this group, that one can conclude that the infection with the virulent *Br. abortus* eventually produced a much stronger resistance than did the subcutaneous vaccination with strain 19." Edgington and Donham (1939) exposed previously infected heifers and cows to infection during pregnancy and found the animals to be remarkably resistant to re-infection. The phenomenon that infection prevents re-infection has been demonstrated in guinea-pigs (McEwen, 1941a). The well-recognised persistence of *Br. abortus* infection in the bovine animal and the tendency to recurrent abortions shown by some animals has contributed to a confusion of opinion on immunity to *Br. abortus* and has delayed the recognition of the resistance to re-infection. If the view that infection with a virulent strain of *Br. abortus* confers protection against re-infection be correct, then should strain 45(20) mutate in the vaccin-

ated animals and become virulent and smooth the immunity of these animals should be very considerable. But a high degree of immunity has not been demonstrated.

Edwards *et al.* reported the isolation of strains of *Br. abortus* showing a wide range of variation from heifers used in immunisation experiments. The heifers had no doubt been reared under conditions that reduced the risks of a field infection with *Br. abortus* to a minimum and therein differed from the cows which were more likely to have been exposed to infection before being tested at the Agricultural Research Council's Field Station. It may be accepted that the strains of *Br. abortus* recovered from the heifers were derived either from the vaccine or from the infective dose. In group C vaccinated heifers, exposed to the small infective dose, one animal showed infection with a strain that in all respects resembled the infective strain 544, but from six animals in group D exposed to the large infective dose seven strains of *Br. abortus* were isolated and four of these strains differed from both the vaccine strain 45(20) and strain 544. The authors avoid any expression of opinion regarding the origins of these variants and in its absence the results might at first consideration increase the weight of their claim that strain 45(20) after inoculation into the non-pregnant cow may in some animals persist in the tissues and subsequently undergo mutation from a rough state to a smooth virulent form. When, however, it is remembered that only one animal in the group exposed to the small infective dose showed infection, and that apparently with strain 544, it is more probable that the variants isolated from the immune heifers exposed to the large infective dose were derived from the bacteria constituting that dose rather than from the vaccine.

It may also be noted that Edwards *et al.* nowhere suggest that the strain used for the infective doses in their immunity experiments was aerobic; indeed, they used the strain for a standard of CO_2 sensitivity in the cultural tests on all the other strains they examined; but in a control group of heifers infected with this CO_2-sensitive strain one animal was found infected with an aerobic strain. Such a finding can be interpreted as showing that a mutation of strain 544 occurred in the tissues of a normal heifer; it is therefore not surprising to find variants of strain 544 being recovered from immunised heifers.

Although the weight of the evidence presented shows that strain 45(20) may be inoculated into non-pregnant animals without causing infection the claim is not made that no animals ever will become infected by vaccination. To make such a claim for any strain of *Br. abortus* would be rash indeed. But the evidence refutes the suggestion that vaccine prepared from strain 45(20) on inoculation into non-pregnant cattle commonly mutates and becomes virulent.

Summary

Experiments are reported and discussed which show that vaccine prepared from strain 45(20) should be suitable for use in the field in that vaccination of non-pregnant animals has not been found to cause the animals to excrete *Br. abortus* from the uterus or from the udder, and serum agglutinins for *Br. abortus* have not developed as a result of vaccination.

Acknowledgments

It is a pleasure to acknowledge my indebtedness and thanks to Mr. Ian Samuel for assistance in the examinations reported in the first part of this paper and to Mr. Jack Piper for assistance in the examinations recorded in the second portion of the paper.

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The rebuilding of Smithfield Market, which was occupied by the military authorities during the war and devastated by a V 2 rocket last March, has been begun.

CLINICAL COMMUNICATIONS

Jaagziekte in Scotland

by

H. E. HARBOUR,

Edinburgh and East of Scotland College of Agriculture

and

S. JAMIESON,

North of Scotland College of Agriculture

Blakemore and Bosworth (1941) described an outbreak of jaagziekte occurring in Norfolk in a batch of cross-bred ewes purchased in Scotland. These authors refer to the work of M'Fadyean, who produced evidence to show that the disease existed in this country, but they remark that the symptoms and lesions of the disease "are so striking that it is difficult to explain the absence of clinical reports relating to its occurrence."

The object of this note is to record two outbreaks of jaagziekte which have been detected in Berwickshire and Aberdeenshire.

The disease was found in a Berwickshire flock of approximately 300 half-bred ewes. Losses had evidently been experienced for many years and usually amounted to about six to eight ewes every year. Affected ewes survived for many weeks after they were first noticed ill and cases cropped up sporadically through the season from lambing-time till autumn. Symptoms were similar to those described by Blakemore and Bosworth though a moderate elevation in temperature was noted in two cases. In both these cases secondary bacterial infection was probably responsible for the febrile reaction as there were several large abscesses in the diseased tissue. *B. purifaciens* was recovered from the yellowish-green pus present in these abscesses. In a third case there were present only two small millet-seed abscesses from which a streptococcus was recovered. In all cases, apart from the abscesses, the changes, both microscopical and histological, were similar to those described by Blakemore and Bosworth.

The Aberdeenshire flock affected consisted of 240 Blackface ewes. Losses had been experienced for many years and during the past three years have amounted to ten to 15 ewes each year.

During the summer of 1945 15 ewes were affected and all eventually died after an illness lasting about three months. The symptoms were characteristic of the disease, and at autopsy the typical changes were seen. In these cases the lesions were principally confined to the dorsal parts of the lungs. There were no secondary abscesses.

Discussion

In both the outbreaks described losses had been going on undiagnosed for many years and it seems possible that the disease may be more widespread than is generally supposed. The affected sheep may be regarded by the shepherds as "piners" and veterinary advice is probably rarely sought.

Acknowledgment.—The writers are indebted to Mr. F. Blakemore, M.R.C.V.S., D.V.S.M., of the Institute of Animal Pathology, Cambridge, who has examined material from both outbreaks and confirmed that the histological picture was identical with that seen in the Norfolk outbreak.

Reference

Blakemore, F., and Bosworth, T. J. (1941.) *Vet. Rec.* **53.** 35-37.

* * * * *

Hoven—An Expression of Allergy?

W. R. KERR and H. G. LAMONT

Kerr and Robertson (1943), in their paper on a study of the antibody response of cattle to *Trichomonas foetus*[1], refer to the general constitutional symptoms produced in sensitised cows by introducing antigen prepared from the Trichomonad parasite into the animal body, *e.g.*, into the uterus.

Among the general symptoms noted was acute tympany of the rumen, such as one finds in animals which have fed on young wet clover, green corn, etc. This condition has been produced experimentally on many occasions and exhibited to experienced veterinary surgeons who have invariably stated that this tympanitic condition is indistinguishable from hoven.

Gas is produced in the rumen and eructation occurs at regular intervals in the normal bovine. In the cow suffering from allergic shock it is suspected that spasm of the unstriped muscle in the oesophageal opening into the rumen occurs and the gas produced being unable to get away, accumulates in the rumen and leads to acute tympany.

Acting on this assumption, adrenalin—which, as is well known, relieves symptoms of allergy, *e.g.*, in asthma—was injected into these animals. The results were in accord with expectation and

the condition was relieved without further treatment. The dose varied from 3 to 5 c.c. subcutaneously, usually one dose was sufficient and the animal was apparently normal in one hour. Atropine sulphate in ½ grain doses has also been used with satisfactory results.

The success of this treatment has prompted us to try it in the field in those cases of hoven or bloat following a feed of clover or green corn or even on occasion young wet grass. The results have been most satisfactory and many cases have required no further treatment. In cases where very marked tympany has occurred and it is obvious that the animal is in immediate danger of asphyxiation, it may be necessary to insert a trochar and cannula to relieve some of the pressure at the same time as one injects the adrenalin.

Mr. S. R. Bolton, M.R.C.V.S., Cookstown, Co. Tyrone, has used this treatment for several years with marked success.

Reference

1 Kerr, W. R., and Robertson, M. (1943.) A Study of the Antibody Response of Cattle to *Trichomonas foetus*. *J. comp. Path.* **53.** No. 4.

ABSTRACT

[Reactions of the Fowl, Pig, Sheep, Dog, Cat and Rabbit to Hot Atmospheres. *Proc. Roy Soc. Queensland.* (1941.) **53.** Nos. 7-12. pp. 129-200.]

Investigation of the reactions of fowls and various domestic animals to high temperatures were carried out with the following breeds: White Leghorn and Australorp fowls, Berkshire pigs, Merino wethers, common cats, short-haired black and tan Queensland dogs and white Angora rabbits.

The ability to endure high temperatures varied inversely with the relative humidity. Generally speaking, the air temperature, at any humidity, at which most of these animals make their first reactions to heat is 80° to 90° F.; the rabbit was found to be more susceptible and showed symptoms at 75° F., while the sheep was not affected until 90° to 95° F. The highest air temperature which could be borne for seven hours at a relative humidity of 65 or less was for the cat, dog and fowl 105° F., for the pig and rabbit 95° to 100° F. and for the sheep 110° F. The first observable reactions to heat occurred when the rectal temperature reached 102° to 103° F. in the pig, sheep, cat and rabbit; with the dog it was lower, namely 100° F.†, and with the fowl it was 108° F. Death occurred when the rectal temperature reached 107° F. with the former group, while with the dog and fowl 109° F. and 113° F. respectively were fatal.

The varying heat withstanding powers of these animals led to an examination of the physiological means they had at their disposal for this purpose. Radiation and conduction were thought to be restricted in the sheep, rabbit, cat and fowl on account of the long coat or feathers and scales as the case might be. Loss of heat by these means must have been aided by one of the first reactions to high temperatures found in nearly all these animals: increased pulse rate. Heat loss by evaporation is restricted by the general absence of sweat glands in all except the sheep. The sweat glands on the pads of carnivores and on the snout of the pig are of little significance: insensible perspiration, evaporation of saliva and evaporation from respiratory passages therefore remain as the means by which the fowl, pig, dog, cat and rabbit can lose heat in this manner. Insensible perspiration is limited in the same way as radiation and conduction and thus can be of significance only in the pig and short-haired dog. Cats, however, moisten their coats until they are dripping and so add to the amount of heat able to be lost by the evaporation of saliva from the snout and tongue. Increased respiratory rate is the most general means for losing heat and is greatest in the rabbit and the dog. In the former the tidal volume is only slightly reduced, so that the possibility of alkalosis is present, but with the latter the tidal volume is greatly reduced, the loss of evaporation from the alveoli being offset by the increased evaporation from the widely open mouth and drooling tongue.

The observable effects of heat were specific for each type. Increased respiration and salivation, preceded or accompanied in the early stages by drowsiness and relaxation, were, however, general. The White Leghorn fowl stood with wings outstretched and panted, while the Australorp lay down and sulked as the rectal temperature rose above 108° F. Marked distress, shown by deep sighing respirations and shaky gait, followed by collapse with pale comb and outstretched legs, came on at a rectal temperature of 113° F. The pig and rabbit were similar to each other. At a rectal temperature of 102° F. the pig was drowsy and at a slightly higher temperature the rabbit sat quietly upon its haunches and was disinclined to move. A small rise in temperature produced rapid breathing in both, accompanied by loss of drowsiness in the pig and assumption of the postrate position in the rabbit. Thereafter, rapid breathing turned to panting and salivation markedly increased. In the dog, as the rectal temperature reached 100° F., drowsiness gave way to open-mouthed panting. Salivation became marked with a rise of 2° F. and the tongue then came to hang out of the side of the mouth. A further rise in temperature produced restlessness and barking. At a rectal temperature of 105° F., the animal was extremely excitable and bit its cage. Weakness of the hind quarters at 107° F. developed into "staggers" at a rectal temperature of 109° F. The tongue was then cyanotic and the abdomen appeared swollen. The cat showed a similar set of reactions in the initial stages to the dog. A further rise in temperature produced increased salivation, while the animal licked the whole of its body, the fore-part first, until the coat was dripping. Visible effects of heat were least noticeable in the sheep whose respiration rate increased at a rectal temperature of 103° F. and changed to panting, with mouth slightly open and tip of tongue protruding, at 106° F.

The presence of water assisted all animals to withstand heat. Water was rapidly drunk, especially in the later stages, when attempts were made by the pig and rabbit to upset the vessel over their bodies. The sheep and White Leghorn fowl kept the fore-part of their heads cool by immersion. The treatment in all cases affected by heat was sousing or immersion in cold water. Preventive measures were investigated for fowls and took the form of constructional devices aimed at maintaining as cool an atmosphere as possible, *e.g.*, whitened roofs.

Acclimatisation was found to be negligible or restricted to hot dry atmospheres. Ability to withstand heat thus seemed to depend on breed rather than on environment, for, among the breeds of, fowls investigated, White Leghorns showed themselves superior in this respect to Rhode Island Reds and Australorps, Minorcas being intermediate. This was considered to be due to body form, the White Leghorn having a large surface area in proportion to its weight as compared to the Australorp. Superficial fat, limiting heat loss, and disinclination to drink put the Australorp at a further disadvantage. The pig, although displaying in some ways considerable powers of withstanding heat, was considered to be handicapped by superficial fat and thus was in no better position than the rabbit.

A. T. P.

† This figure is low by normal standards.

BORIC ACID POISONING

Search of medical literature reveals many instances of accidental poisoning with boric acid, and in some instances this has occurred following its use in ointment and powder form," states *The North American Veterinarian* in its November issue, and continues: "Fatal poisonings have been reported following the use of powdered boric acid in wounds, boric acid solution in the bladder, and otherwise. Both the powder and solution have caused death when accidentally administered in food. Here quoted is E. H. Watson,[1] who has more to offer: 'Many indispensable drugs are known to be dangerous when used in improper dose or by unusual routes of administration—digitalis, iodine and others immediately come to mind as illustrations. Certain toxic drugs—arsenicals, for example—continue in use because of their effectiveness and because nontoxic substitutes of proved effectiveness are lacking. It cannot sensibly be argued that an effective drug should be dropped from use simply because the occasional patient reacts unfavourably to the ordinary dose or because untoward reactions follow the accidental administration of an excessive dose. When, however, a drug can be shown to be almost entirely ineffective and at the same time dangerous even when used in ordinary ways, it is time to remove that drug from general use as rapidly as possible. Boric acid is such a drug.'"

1 Watson, E. H.: Boric acid. *J.A.M.A.* (1945), **129**, 332-333.

* * * * *

A nine-months-old large white boar, which at Peterborough N.P.B.A. show and sale won championship and supreme title for Messrs. Chivers & Son, Histon, Cambs., was sold for 400 guineas to Mr. R. H. Turner, Grey Friars, Hogs Back, near Guildford, Surrey. This young boar had as grandparents a boar that was breed champion at the Windsor Royal Show and a sow that bred 158 pigs in 13 litters. Surely an example of pedigree performance.—*Meat Trades Journal.*

* * * * *

Weekly Wisdom

". . . In a crisis, the wise course is to accept the situation as one finds it to exist; then build upon it, profiting always by experience. . . ."—Anon.

REVIEWS

[**La Pathologie des Oiseaux.** By G. Lesbouyries, Professor of the Alfort Veterinary School. 556 illustrations; seven coloured plates. Vigot Frères, 23, Rue de l'Ecole de Médecine, Paris.]

The title page of this imposing volume bears the significant date, 1941; there must surely be some interesting facts concerning its publication at such a time during the German occupation of France. The book comprises nearly 500 pages, of large dimensions (8¼ in. × 10¼ in.), the type is large and easy on the eye, and we paper-rationed Britons can only exclaim in envy at such war-time opulence on the part of its publishers.

This work appears to us to deserve the eulogism masterly. Its embrace of the literature is encyclopaedic, its style lucid and elegant. Comparison with efforts made during the war on this side of the channel to fill the great need here for an adequate text-book of poultry diseases only serves to emphasise the excellencies of Professor Lesbouyries' achievement. In according him our congratulations and thanks, may we urge him to move heaven and earth for a worthy edition in the English tongue. We can assure him it will receive a warm—and not unremunerative—welcome!

* * * * *

The "Irish Veterinary Review."—In 1944 the Students' Union of the Veterinary College of Ireland issued the first number of their *Journal* as the "Veterinary College of Ireland Book." This year's production proclaims itself as the "Irish Veterinary Review," and, admirable in content and format though it is, we cannot but feel that, in the matter of title, student enthusiasm has outrun discretion somewhat, in view of the expressed hopes of many veterinarians in Ireland for the production of a periodical fully representative of the "art and science" in that country. At the same time, in the absence of such, it must be said that this venture goes a creditable distance towards filling the gap, for it is a good deal more than a "college magazine" in scope. Graduates will probably read with interest such articles as those contributed by members of the profession on "Some Aspects of Artificial Insemination," "Dietary Excesses and Deficiencies," "Greyhound Racing—Past and Future" and "Veterinary Status and Remuneration," although the material is somewhat elementary for practitioners who are familiar with these subjects.

The Magazine Committee are to be commended for including an admirable review of the history and work of the Victoria Veterinary Benevolent Fund, and congratulated upon the production, in excellent style, of an interesting number. The experience in journalism gained in the production of the Journal will doubtless prove of great value to the students of the Dublin Veterinary College. [Price 2s. 6d., post free, from the Veterinary College of Ireland, Dublin.]

* * * * *

Among publications received is "Science the Endless Frontier," a report to the President of the United States by Vannevar Bush, Director of the Office of Scientific Research and Development. Dated July, 1945, it is published (unpriced) by the U.S. Government Printing Office, Washington.

CHIEF OF THE BUREAU OF ANIMAL INDUSTRY

The North American Veterinarian records that the retirement of Dr. Arthur W. Miller as chief of the Bureau of Animal Industry and the appointment of Dr. Bennett T. Simms to succeed him have been announced by P. V. Cardon, head of the Agricultural Research Administration.

Dr. Miller was appointed chief of the Bureau of Animal Industry on August 1st, 1943, following the retirement of Dr. John R. Mohler. Dr. Miller had been assistant chief of the Bureau since January 1st, 1928, and prior to that held many positions of importance over a long period of years.

Dr. Simms, who will become the fifth chief of the Bureau, has been in charge of the Regional Animal Disease Research Laboratory of the United States Department of Agriculture at Auburn, Ala., since April 1st, 1938. For 25 years (1913-38) he was at the Oregon State Agricultural College, and during that time he organised and served as head of the Department of Veterinary Medicine in that institution.

During his seven years at Auburn, Dr. Simms directed a number of research projects, mainly in the field of parasitology. Under his leadership, workers at the laboratory developed a plan for the practical management of coccidiosis of young calves, a disease that has caused very heavy losses in the South-East.

At the present time Dr. Simms is President-Elect of the American Veterinary Medical Association and *ex-officio* a member of the Board of Governors and the Executive Board of the national organisation.

R.C.V.S. MEMBERSHIP EXAMINATIONS

List of Successful Candidates

(*Concluded*)

Dublin

First Year:

Gilmore, D. J.
Horan, H.
McCarthy, M.
Mahon, F.
Murphy, P. F.
O'Brien, M. G.
Rosney, P. C.
Stewart, P.
Walls, W. T.

Second Year:

Buckley, Thomas
Cox, J. R.
Donovan, D. B.
Galvin, T. A.
Hannan, P. J.
Knightly, M.
Loughran, P. K. (H)
McCauley, P. J.
McClancy, B. N.
Murphy, Michael
Ni Mhaoileoin, Miss S.
O'Boyle, J. M.
O'Connell, T. J.
O'Nuallain, T.
Stack, Robt.
Treacy, J. T. M.

(H) denotes credit in Histology.

Third Year:

Burke, J. T.
Byrne, P. F.
Connor, P. J. (H)
Hughes, F. J.
McGovern, Gregory
McNeill, John
Maguire, C. G. (A) (H)
Mundy, W. A.
Quaid, Thomas
Rackard, Nicholas
Roe, P. F.
Ryan, P. J.
Weir, Edward
White, Declan

(A) denotes credit in Anatomy.
(H) denotes credit in Hygiene.

Fourth Year:

Bourke, J. P.
de Lacy, Thomas
Flanagan, Michael
Henigan, M. J.
Higgins, P. K.
Hirsch, E. A.
Hunt, T. G.
McCarthy, J. K.
McFerran, A. M.
McGroarty, D. J.
McKinstry, Miss E. P.
Maybin, R. (Path)
Moloney, Edmund
Murphy, P. A.
O'Dee, M. J.
O'Leary, H.
O'Riordan, John (Paras)
Shearman, F. E.
Sweeney, P. J. A.
Thornton, Edward
Twomey, Michael
Wiltshire, F. H. (Paras)

(Path) denotes credit in Pathology.
(Paras) denotes credit in Parasitology.

Final Year:

Burgess, S. R.
Burke, E. S.
Canavan, R. J.
Cooney, John
Cosgrove, J. F.
Curtin, Sean
Dromey, W. M.
Erskine, R. G.
Fitzgibbon, J. P.
Hatton, R. D.
Kealy, B. A.
Kelly, Roderick
Loughlin, E.
Mone, P. B.
O'Brien, W. B.
O'Donnell, B. L.

NEW MOTOR CARS

The Minister of War Transport announces that in view of the increased production anticipated in 1946 he has decided to discontinue the system of licences to acquire all types of new motor vehicles (private cars, goods vehicles, and public service vehicles). Accordingly no further licences will be issued by the Ministry. The manufacturers have undertaken to supply new vehicles to holders of licences already issued before meeting the orders of other customers. The Minister is also removing the control on the sale of second-hand public service vehicles which will no longer need the authority of a licence from the Regional Transport Commissioner. Before entering into any commitment to buy a goods vehicle or public service vehicle, the intending purchaser should make the usual enquiries to satisfy himself that the Regional Transport Commissioner is prepared to grant him a permit authorising its use.

* * * * *

The Canine Insurance Association, Ltd., returned to the City on January 1st, and their address is 61-62, Gracechurch Street, London, E.C.3. The telephone number will be the same as previously, *i.e.*, Mansion House 8089.

With returning staff and the move back to the City, the Canine Insurance hope soon to pick up arrears and deal with business as promptly as they did before the outbreak of war.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Jan. 7th.—Meeting of the Farmers' Club, at the Royal Empire Society, W.C.1, 2.30 p.m.
Jan. 9th.—Meeting of the Editorial Committee, N.V.M.A., 2.30 p.m.
Jan. 9th.—R.C.V.S. Committee Meetings.
Jan. 10th.—R.C.V.S. Committee Meetings.
Jan. 11th.—R.C.V.S. Council Meeting.
Jan. 18th.—Annual Meeting of the Mid-West Division, N.V.M.A., at Bristol (Bright's Restaurant, Queen's Road, Clifton), 2.15 p.m.

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PERSONAL

The New Year Honours

Knighthood for Mr. Frank Ware

The New Year Honours List, published during the early part of the past week, announces that Mr. Frank Ware, C.I.E., F.R.C.V.S., who has rendered such outstanding services to the Government of India in the realm of animal husbandry, has been made a Knight Bachelor.

Mr. Frank Ware, who qualified from London in 1906, and who became a Fellow in 1921, entered the Indian Veterinary Service in 1907, assuming charge for two years as Assistant Principal, Bombay Veterinary College. In 1909 he was transferred to the Central Provinces for field training, remaining there till 1911, where he was given his first permanent appointment as Superintendent, Civil Veterinary Department, Madras. He remained in that Presidency for 18 years, leaving in 1929 to take up the position of permanent Director of the Imperial Veterinary Research Institute, Mukteswar. Mr. Ware succeeded Sir Arthur Olver as Commissioner with the Central Government, being succeeded in turn by Major Grahame Williamson from the Edinburgh Veterinary College. In 1938 he was appointed to the position of Animal Husbandry Commissioner with the Government of India, and, on his retirement in June, 1944, he joined the Government of the United Provinces as Director of Animal Husbandry, his work there being mainly concerned with war-time needs of food production.

Brigadier Kelly Honoured

Another award which will be warmly welcomed by the profession is that of the C.B. to Brigadier George Alexander Kelly, Director, Army Veterinary and Remount Services.

Brigadier Kelly qualified at the Dublin Veterinary College in December, 1910, and in the following February was commissioned in the Royal Army Veterinary Corps. In the war of 1914-1918 he served in France with the Indian Expeditionary Force and on the North West Frontier of India. He was mentioned in despatches for services on the North West Frontier of India. In 1935 he was awarded the Brevet rank of Lt.-Colonel.

Early in 1940 he was appointed Deputy Director of Veterinary Services, Palestine, and later was transferred to Middle East Command Headquarters, where, on the amalgamation of the Veterinary and Remount Services, he became Deputy Director of both Services. For distinguished services in this theatre of war he was mentioned in despatches in December, 1942. Brigadier Kelly assumed duty as Director, Army Veterinary and Remount Services, War Office, on March 1st, 1943, in succession to Brigadier C. A. Murray, C.B.E.

More particularly in view of his long and cordial association with representatives of the N.V.M.A. on numerous occasions, we note with pleasure that Sir Donald Vandepeer, Permanent Secretary, Ministry of Agriculture and Fisheries, receives the K.C.B., whilst other awards of special interest to our readers are those of the C.B.E. to Professor H. D. Kay, F.R.S., Director of the National Institute for Research in Dairying, and to Professor I. A. Scott-Watson, newly appointed Chief Education Officer to the Ministry of Agriculture and Fisheries.

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Appointments: University College of Wales, Aberystwyth.—Mr. H. Ivor Field, M.R.C.V.S., who formerly held a similar post at the University College of North Wales, has been appointed Assistant Veterinary Investigation Officer. Other appointments in the Veterinary Investigation Department and in the Department of Animal Health include those of Mr. Gwilym O. Evans, B.SC., who formerly held an appointment with the D.S.I.R., and of Mr. Maldwyn Fisher, B.SC., formerly at the West of Scotland Agricultural College.

Births.—Daniel.—On December 23rd, 1945, at Crewkerne Hospital, to Brenda (*née* Rust) and Walter Daniel, M.R.C.V.S., a son (Gordon Bruce).

Hall-Patch.—On December 30th, 1945, at The Firs Nursing Home, Roxborough Park, Harrow-on-the-Hill, to Margaret, wife of Capt. P. K. Hall-Patch, R.A.V.C., a second daughter (Jessica Mary).

* * * * *

Farewell Presentation to Mr. J. M. Rorrison.—On December 18th Mr. John M. Rorrison, M.R.C.V.S., who is leaving Lichfield to take up practice in Derbyshire, was presented with a salver, a cheque and a parchment scroll of subscribers, by clients and other friends gathered thus to express their esteem for Mr. and Mrs. Rorrison and to wish them well in their new sphere.

Mr. Philip Norton occupied the chair, supported by Mr. F. D. Axten, who undertook the secretarial work. In addressing the assembly Mr. Norton spoke of the community's appreciation of and gratitude to Mr. Rorrison for his untiring efforts and efficiency in the exercise of his profession in Lichfield.

Mr. Norton made reference to the frequency with which Mr. Rorrison had been called on to assist at public and agricultural enterprises, when he had always been ready to help, and proceeded: "We regret his leaving for many reasons: firstly, he has endeared himself to all of us by his personality, and we have felt him to be a friend. We have witnessed a most loyal devotion to duty, whatever time of the day or night, and he has always displayed the same conscientious spirit of 'off with his coat and on with the job,' whether it has been a large farmer's valuable animal or a cottager's kitten. I have ceased to tell stories about the nearness of Scotsmen since I knew John Rorrison.

"His skill in administering treatment has been a pleasure to see and his advice has always been most sound. I know that I and many others have been saved much expense and loss. A veterinary surgeon of Mr. Rorrison's calibre is an asset beyond all measure, not only to the livestock owner but to the nation at large, and in Mr. Rorrison Bonnie Scotland has every right to be proud of another of her sons.

"From the chair," concluded Mr. Norton, "I propose a vote that we place on record our sincere appreciation of the valuable and unfailing service rendered by John W. Rorrison whilst practising his profession in Lichfield and district."

Mr. W. J. Shaw and Mr. Sidney Baxter supported the Chairman's remarks.

In accepting the presentation Mr. Rorrison said he had been most happy in working in the Lichfield district, and it was with regret that it would not be possible for him to meet them so often, but he hoped to maintain a social contact when the opportunity arose.

* * * * *

Dr. Taylor's Tour.—Dr. E. L. Taylor, of the Veterinary Laboratory of the Ministry of Agriculture, is about to undertake a series of visits for the Ministry to a number of research centres of Veterinary Parasitology in the Dominions of Australia and Canada and in the United States of America. The purpose of the tour is to discuss the progress of research in veterinary parasitology and to visit the parasitological laboratories and field experimental stations in those countries with a view to future development in that field of research at Weybridge.

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R.C.V.S. OBITUARY

Orr, William, F.R.C.V.S., Lieut.-Colonel, Veterinary Department, Military Administration, Malaya, and S.V.O., Dept. of Agriculture and Fisheries, Jerusalem, Palestine. Graduated London, July 11th, 1930; Fellowship June 10th, 1943. Died December 3rd, 1945.

Stevens, William Squire, Major R.A.V.C. (T.A.), c/o Glyn Mills & Co., 22, Whitehall, S.W.1. Graduated Edinburgh, December 19th, 1901. Died—suddenly, at Putney—December 25th, 1945.

Lieut.-Colonel William Orr, F.R.C.V.S.

Lieut.-Colonel William Orr's death, which took place as the result of an accident in Malaya, will be mourned by many in the profession, who will feel deep sympathy with the bereaved parents, Mr. and Mrs. Monro S. Orr, Corrie, Isle of Arran, in the loss of their only son, and with his widow and three children, the youngest of whom he never saw.

Mr. F. B. Hardy, M.R.C.V.S., of Douglas, I.o.M., writes: "I was happy to be one of William Orr's friends while I was at college and after, and I very much doubt if there was a finer man in the ranks of the profession. Of his academic and colonial service career it is not my place to speak; his immediate contacts, those who have worked with him these past few years, will appreciate these, and speak with greater authority on these matters than I can; I can only speak of him as a man, and as such I found him everything that one associates with that word. He was greatly travelled, widely read, acquainted with many of the world's notable men and women, yet in himself he was simple, direct and honest.

a great lover of the open spaces, of his homeland Scotland, and his other home, Southern Rhodesia.

"We who remain shall miss this man, and the world is the loser by his untimely passing."

THE LATE MR. JAMES CHALMERS, M.R.C.V.S.

In connection with the death of Mr. James Chalmers, recorded in our issue of December 8th, 1945, Dr. J. H. Mason, our corresponding member for South Africa, writes as follows:—

The death of Mr. James Chalmers, M.R.C.V.S., occurred in Johannesburg on Friday, November 2nd, 1945.

Mr. Chalmers, a graduate of the London College, obtained his diploma in 1900 and came to South Africa with the British Forces at the time of the South African War. He joined the Veterinary Division of the Transvaal Department of Agriculture in 1903 and when union took place was transferred to the Union Department of Agriculture.

He retired from Government service in 1930 on reaching the age limit and took up private practice in Johannesburg. In addition he held the appointments of Veterinary Officer to the South African Institute for Medical Research and Quarantine Officer for the outlying territories—Swaziland, Rhodesia, South-West Africa and Bechuanaland.

In spite of the serious physical disability of rheumatoid arthritis, Mr. Chalmers was always cheerful and active, and managed an extensive practice in addition to his other duties. His death at the age of 70 removes from the ranks of South African veterinarians a man of wide experience and varied interest—a loss the profession can ill afford.

He is survived by his widow, a son, and a married daughter, to whom the profession extends its sincere sympathy.

THE LATE MR. THOS. BOWETT, M.R.C.V.S.

Many members of the profession will have read with deep regret the announcement made in our issue of December 22nd of the sudden death of Mr. Thomas Bowett, M.R.C.V.S., of Manor Lodge Farm, Worksop, and senior partner in the Newcastle Street practice.

Mr. Bowett, who was in his 67th year, was the only son of the late Mr. and Mrs. W. S. T. Bowett, of Scarcliffe, and went to Worksop at the age of 16 as a pupil in the practice of which, later, he was for many years the principal.

In the course of a tribute the *Worksop Guardian* says of him that during his professional career he came to be held in the highest esteem and confidence of all with whom he was associated, both in a private capacity and as veterinary inspector for the Ministry of Agriculture, in a particularly wide area. He had the greatest interest in, and an expert knowledge of, thoroughbred stock, towards the care and improvement of which his advice was readily sought and equally readily given. A practical farmer himself, he farmed Manor Lodge from 1918 until shortly before the outbreak of war. He had, indeed, an all-consuming love of the countryside and its denizens. A good shot, Mr. Bowett spent many days with the gun and was, indeed, engaged in this pursuit on land in the district at the time of his unexpected collapse and passing.

It was not, however, solely to veterinary surgery and agriculture that Mr. Bowett's valued interest was devoted, for he also took an active part in Freemasonry and the Rotary movement in Worksop. He was a Past Master of the Pelham Lodge and a Past President of the Rotary Club, and had continued his interest in both organisations. With Mrs. Bowett, he was a member of St. Anne's Church. There are two sons—Mr. T. S. Bowett, King's Lynn, and Mr. John Bowett, M.R.C.V.S.—and three daughters—Mrs. C. E. Tylden-Wright, Mrs. P. D. Thomson, Harrogate, and Miss Ruth Bowett, to whom deep sympathy is extended in their loss.

Before the business was commenced at a recent meeting of Worksop Rural Council, the members, at the suggestion of the Chairman, Mr. F. K. Godber, J.P., passed a resolution of condolence with members of the family. Stating that Mr. Bowett was an efficient and courteous officer, the Chairman said he was the last man to hold the position of veterinary surgeon to the Council.

The particularly large attendance at the funeral at St. Anne's Church bore testimony to the esteem in which Mr. Bowett was held in Worksop and a wide surrounding district. Members of the profession present, in addition to Mr. John Bowett, were Mr. T. Ludlow (Mansfield), Mr. S. E. Samoson (Sheffield) and Mr. G. Wildbore.

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ADDRESSES OF DISEASE-INFECTED PREMISES

SWINE FEVER:

Carmarthenshire.—Bryncoch Farm, Meadows Road, Crosshands, Llanelly, Carmarthenshire (Dec. 24th).

Essex.—Nurseries, Barkingside, Ilford, Essex (Dec. 26th).

Norfolk.—Vincents Marsh, Cobholm, Great Yarmouth, Norfolk; Castle Farm (including off premises Pennyspot Farm, and Wensum Farm), Swanton Morley, Dereham, Norfolk (Dec. 22nd).

Soke of Peterborough.—Flag Fen House, Peterborough (Dec. 24th).

Staffs.—Lyndon Lodge, Lyndon, West Bromwich, Staffs. (Dec. 27th).

Surrey.—54, Northwood Road, Thornton Heath, Croydon, Surrey (Dec. 22nd); Brickfield Farm, Limpsfield Road, Warlingham, Surrey (Dec. 31st).

Yorks, W.R.—Manor Farm, Wetherby Road, Scarcroft, Thorner, Leeds (Dec. 29th).

Yorks, E.R.—Stray Farm, Market Weighton, York (Dec. 31st).

SHEEP SCAB:

Derbyshire.—Baslow Moors, Baslow, Bakewell, Derbyshire (Dec. 29th).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

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(*a*) JOHN JEYES SCHOLARSHIP; (*b*) TRACE ELEMENTS AND PLANT PATHOLOGISTS

Sir,—This letter concerns two quite unrelated subjects which might, however, be considered under the heading of post-war developments.

(*a*) *John Jeyes Scholarship*

It will be recalled that somewhere about 1936 the Directors of the Jeyes Disinfectant Company instituted a post-graduate scholarship which, valued at £100, was to be awarded annually as a memorial to the late Sir John Jeyes. The conditions of award were that the scholarship could be granted only to members who had qualified during the previous ten years. Although there was no specification to this effect, it was usual for the scholarship to be given in order to enable the recipient to travel and study abroad. Typical of the valuable results following upon tenure of the award, was the work of Mr. S. L. Hignett, who, by travelling on the Continent, was able to gain experience which resulted in his very valuable contributions to infertility in dairy stock.

It is not altogether necessary to travel abroad to obtain the advantage of interchange of ideas. Before I left for New Zealand I was able to visit most of the establishments working on mastitis in Great Britain, and I found the experience extremely valuable. Whilst working as Assistant Veterinary Investigational Officer, I realised that it would be a good thing if some of our more enlightened practitioners could have an opportunity of travelling round the country and seeing, not only what is being done in some of the scientific institutions, but also some of the work carried out by their fellow practitioners in the field.

This seems an appropriate occasion to ask "what has happened to the John Jeyes Scholarship?" The award is, I believe, handled by the Royal Veterinary College, who last advertised this scholarship in 1939, when a grant was made to Mr. Knight for assistance in his work associated with skiagram technique. It appears that there has been no award during the war years and I would therefore suggest that:—

1. Multiple awards be made during the coming years.
2. The number of years during which there has been no award be subtracted from the total of years after qualifying, from all those who graduated after 1930.

(*b*) *Trace Elements and Plant Pathologists*

It is becoming increasingly evident that a number of diseases in dairy cattle found in Great Britain are due to deficiencies of trace elements. The limitations of chemical analyses of the soil are well known because these do not necessarily bear any relationship to the availability of these elements to grazing animals. It may not be generally realised that the first manifestations of trace element deficiencies occur in plants themselves and skilled plant pathologists are able to recognise these symptoms. I understand that field tests are now being evolved, which allow the botanists to get a pretty shrewd idea of the order of deficiency. Before I left Bristol I had an opportunity of spending an afternoon with Mr. J. O. Jones, of Long Ashton Research Station, and I found the experience most enlightening. He was able to describe to me regions of known deficiency, and it occurred to me that it is a great pity that there is no system of liaison between such scientists and the veterinary profession, because I feel that were such knowledge pooled, a line might be got on the number of diseases which have hitherto puzzled both the practitioner and the research worker.

Yours faithfully,

Wallaceville Animal Research Station, R. W. ROACH.
Wellington, N.Z.
December 13th, 1945.